

WHAT IS CLAIMED IS:

1. A chip-type solid electrolytic capacitor having a mounting surface and comprising:
 - a pair of capacitor elements laminated in a predetermined direction perpendicular to the mounting surface, each of the capacitor elements using a valve metal and having an anode member and a cathode layer mechanically coupled to the anode member;
 - a pair of anode lead wires each of which is led out from the anode member in parallel to the mounting surface;
 - an anode terminal connected to the anode lead wires;
 - a cathode terminal connected to the cathode layer; and
 - an encapsulating resin encapsulating the capacitor elements with the anode and the cathode terminals partially exposed, the anode terminal including two branches having branch end portions, respectively, which are formed by shaping, the branch end portions having shapes substantially same to each other so that the branch end portions overlap each other by rotation of 180° around a straight line at an intermediate position between the anode lead wires, the branch end portions being welded to the anode lead wires to produce welded portions, respectively.
2. The chip-type solid electrolytic capacitor according to claim 1, wherein the anode terminal further includes a body portion, the branches being connected to the body portion and branched at a position which is on an intermediate plane located at a substantial center between the anode leads.
3. The chip-type solid electrolytic capacitor according to claim 1, wherein the anode terminal further includes a body portion, the branches being connected to the body portion and branched at a position which is on a side surface of the chip-type solid electrolytic capacitor.

4. The chip-type solid electrolytic capacitor according to claim 1, wherein one of the branch end portions is bent in a direction away from the mounting surface while another of the branch end portions is bent in a direction towards the mounting surface.

5. The chip-type solid electrolytic capacitor according to claim 1, wherein each of the branched end portions has a first and a second surface which are opposite to each other in the predetermined direction, one of the welded portions being formed on the first surface of one of the branch end portions, another of the welded portions being on the second surface of another of the branch end portions.

6. A chip-type solid electrolytic capacitor having a mounting surface and comprising:

three capacitor elements laminated in a predetermined direction perpendicular to the mounting surface, each of the capacitor elements using a valve metal and having an anode member and a cathode layer mechanically coupled to the anode member;

three anode lead wires each of which is led out from the anode member in parallel to the mounting surface;

an anode terminal connected to the anode lead wires;

a cathode terminal connected to the cathode layer; and

an encapsulating resin encapsulating the capacitor elements with the anode and the cathode terminals partially exposed, the anode terminal including three branches having a first, a second, and a third branch end portion, respectively, which are formed by shaping, the first and the third branch end portions having shapes so as to overlap each other by rotation of 180° around a straight line, the second branch end portion being between the first and the third branch end portions, the first, the second, and the third branch end portions being welded to the anode lead wires to produce welded portions, respectively.

7. The chip-type solid electrolytic capacitor according to claim 6, wherein the anode terminal further includes a body portion, the branches being connected to the body portion and branched at an inside of the encapsulating resin.

8. The chip-type solid electrolytic capacitor according to claim 6, wherein the anode terminal further includes a body portion, the branches being connected to the body portion and branched at a position which is on a side surface of the chip-type solid electrolytic capacitor.

9. The chip-type solid electrolytic capacitor according to claim 6, wherein the first branch end portion is bent in a direction away from the mounting surface while the third branch end portion is bent in a direction towards the mounting surface.

10. The chip-type solid electrolytic capacitor according to claim 6, wherein the cathode terminal has two branches connected to the cathode layer between adjacent ones of the capacitor elements.

11. A chip-type solid electrolytic capacitor having a mounting surface and comprising:

four capacitor elements laminated in a predetermined direction perpendicular to the mounting surface, each of the capacitor elements using a valve metal and having an anode member and a cathode layer mechanically coupled to the anode member;

four anode lead wires each of which is led out from the anode member in parallel to the mounting surface;

an anode terminal connected to the anode lead wires;

a cathode terminal connected to the cathode layer; and

an encapsulating resin encapsulating the capacitor elements with the anode and the cathode terminals partially exposed, the anode terminal including four branches having a first, a second, a third, and a fourth branch end portion,

respectively, which are formed by shaping, the first and the fourth branch end portions having shapes so as to overlap each other by rotation of 180° around a straight line, the second and the third branch end portions being between the first and the fourth branch end portions and having shapes so as to overlap each other by rotation of 180° around the straight line, the first, the second, the third, and the fourth branch end portions being welded to the anode lead wires to produce welded portions, respectively.

12. The chip-type solid electrolytic capacitor according to claim 11, wherein the anode terminal further includes a body portion, the branches being connected to the body portion and branched at a position which is on an intermediate plane between second and third ones of the anode wires counted from the mounting surface.

13. The chip-type solid electrolytic capacitor according to claim 11, wherein the anode terminal further includes a body portion, the branches being connected to the body portion and branched at a position which is on a side surface of the chip-type solid electrolytic capacitor.

14. The chip-type solid electrolytic capacitor according to claim 11, wherein the first and the second branch end portions are bent in a direction away from the mounting surface while the third and the fourth branch end portions are bent in a direction towards the mounting surface.

15. The chip-type solid electrolytic capacitor according to claim 11, wherein the cathode terminal has three branches connected to the cathode layer between adjacent ones of the capacitor elements.

16. A method of producing a chip-type solid electrolytic capacitor having a mounding surface and comprising a plurality of capacitor elements which are laminated in a direction perpendicular to the mounting surface and electrically connected in parallel, each of the capacitor elements having an anode member using a valve metal, an anode lead wire led out from the anode

member, and a cathode layer mechanically coupled to the anode member, the method comprising the steps of:

preparing a lead frame having an anode terminal forming portion and a cathode terminal forming portion, the anode terminal having a center line and a plurality of branches symmetrical with each other with respect to the center line;

shaping the branches by bending;

welding the capacitor elements to the anode terminal forming portion and connecting the cathode layer to the cathode terminal forming portion;

molding the capacitor elements, connected to the lead frame, by an encapsulating resin to obtain a molded body; and

cutting the lead frame to separate a part of the lead frame from the molded body.

17. A chip-type solid electrolytic capacitor having a mounting surface and comprising:

a capacitor portion having a plurality of capacitor elements laminated in a predetermined direction perpendicular to the mounting surface, each of the capacitor elements using a valve metal;

a cathode terminal led out from the capacitor portion;

a plurality of anode lead wires led out from the capacitor portion in parallel to the mounting surface, the anode lead wires being positioned apart from each other in the predetermined direction;

an anode terminal connected to the anode lead wires; and

an encapsulating resin encapsulating the capacitor portion with the anode and the cathode terminals partially exposed,

the anode terminal including a plurality of branch end portions which are positioned apart from each other in the predetermined direction and welded to the anode lead wires, respectively.

18. The chip-type solid electrolytic capacitor according to claim 17,

wherein the capacitor portion has a plurality of cathode layers parallel to the mounting surface, the cathode layers being positioned apart from each other in the predetermined direction, the cathode terminal including a plurality of branch end portions which are positioned apart from each other in the predetermined direction and connected to the cathode layers, respectively.